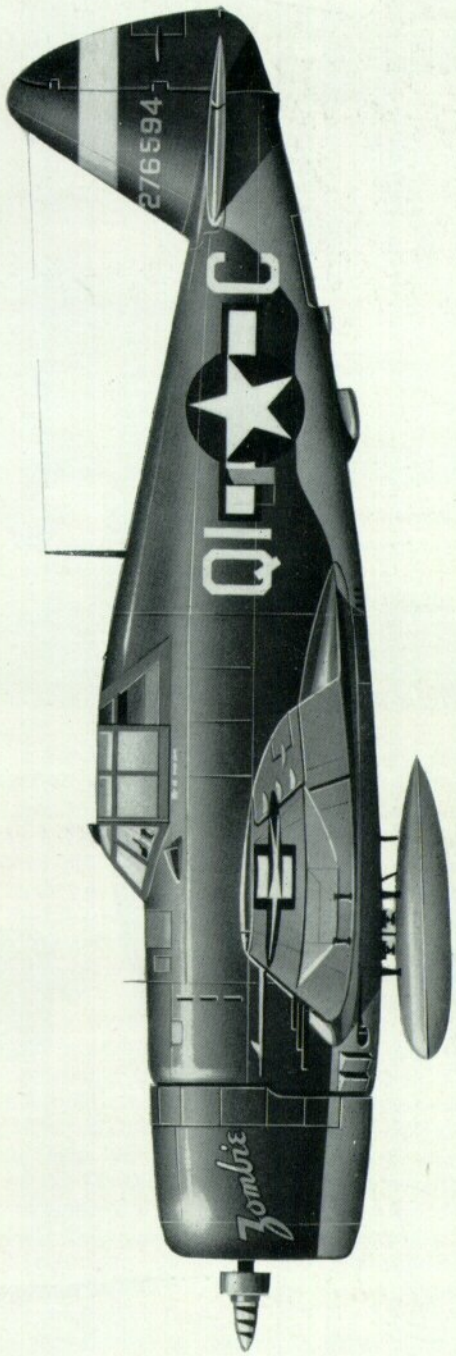
PROFILE PUBLICATIONS

The Republic P-47D Thunderbolt



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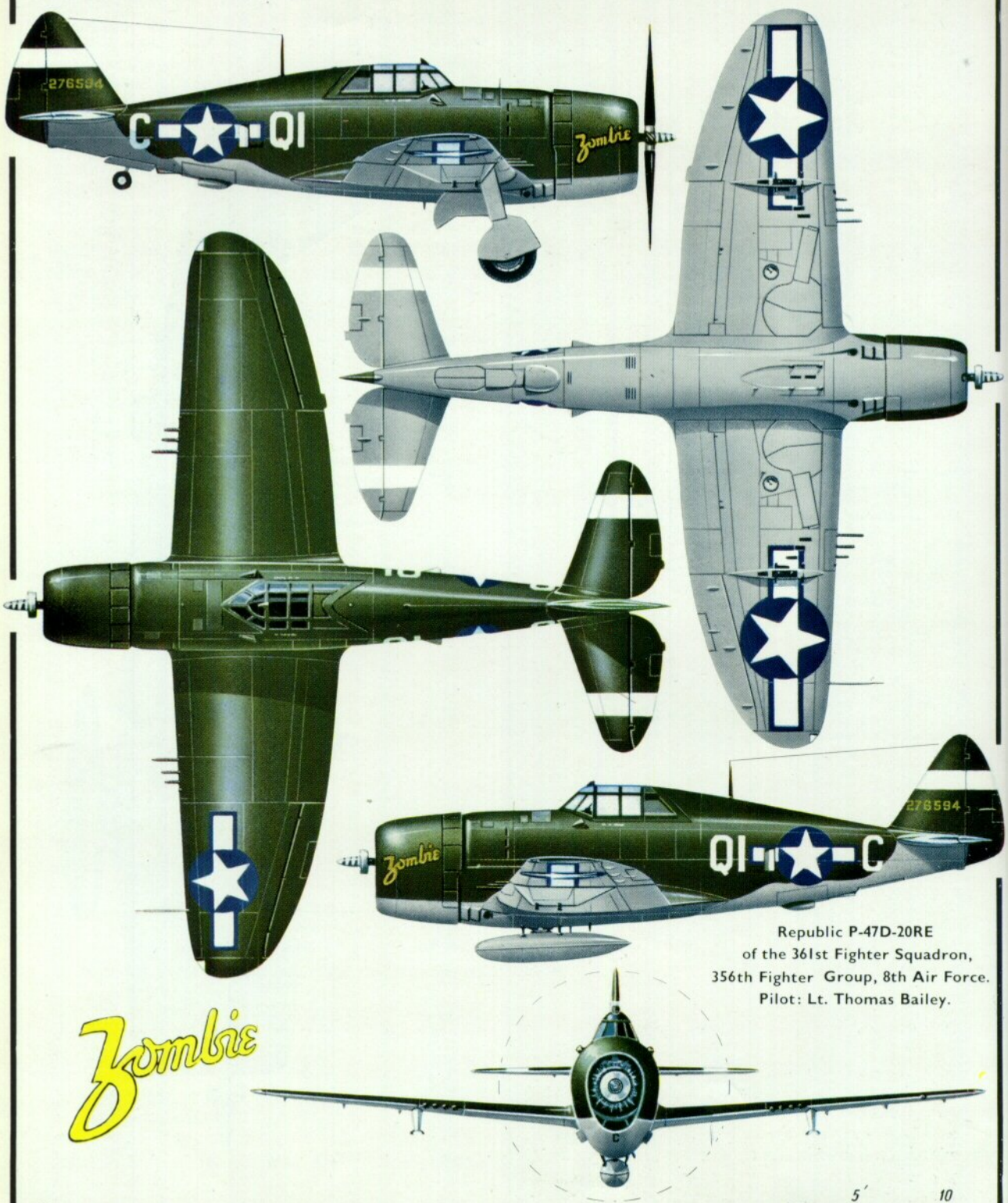

Republic P-47D-20RE
of the 361st Fighter Squadron,
356th Fighter Group, 8th Air Force.
Pilot: Lt. Thomas Bailey.

Zombie

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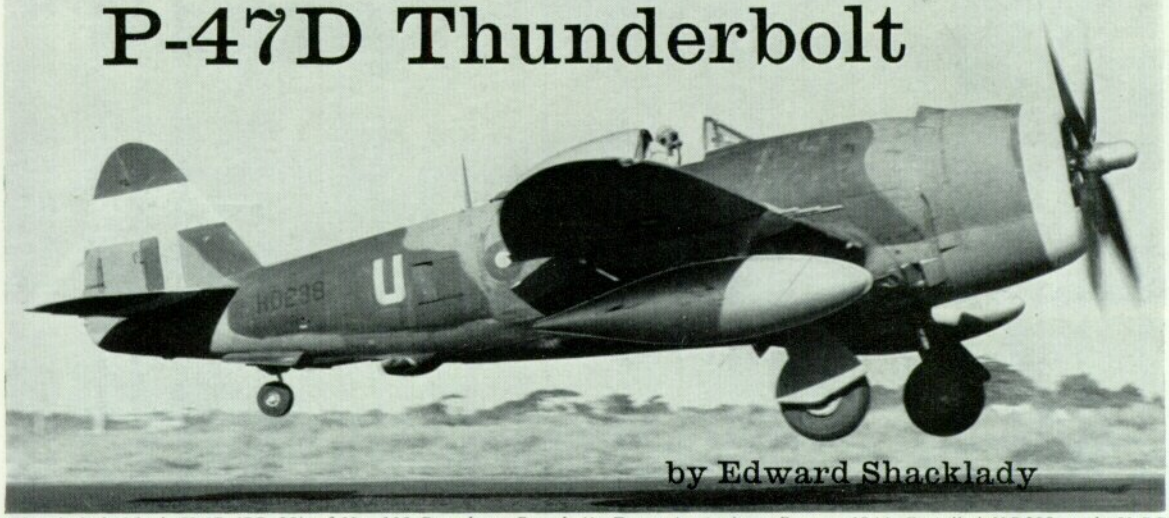
5′ 10

The Republic P-47D Thunderbolt



by Edward Shacklady

Thunderbolt Mark II (P-47D-25) of No. 135 Squadron, Royal Air Force, in Arakan, Burma, 1944. Serialled HD298, code U-RS, it was one of the first batch of 120 aircraft delivered. (Photo: Imperial War Museum)

Beauty or beast, that was the Republic P-47 Thunderbolt, and there were no two ways about it. Pilots either loved or loathed designer Alexander Kartveli's corpulent fighter. And yet this aeroplane, conceived during the opening months of World War II, was to become one of the most outstanding fighters of its generation and a legend in its own time. A legend that was written around the exploits of the numerous "Ace" pilots who flew it, men like Lt.-Col. F. S. Gabreski, whose total of thirty-one confirmed victories put him at the head of the high scoring list, and Captain R. S. Johnson (28) and Colonel H. Zemke (20).

Like all new and untried aeroplanes the Thunderbolt was plagued with teething troubles and it was a constant battle to overcome them. The prototype XP-47 suffered from many deficiencies including excessive control loads at high altitude, and the first production batches of the P-47B and 47C developed faults that were patiently eradicated.

By the time the P-47D began leaving the production lines most of the major snags had been overcome, and this variant was eventually to be produced in greater numbers than any other type. It represented about 80 per cent of the entire P-47 production programme with a grand total of 12,602 machines built.

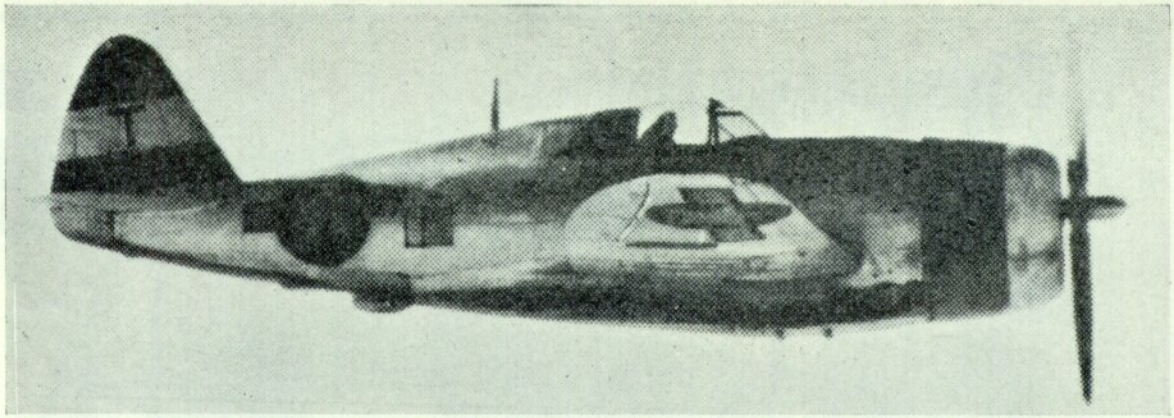
Early production P-47D-11-RE showing old razor-back fuselage and metal-framed cockpit canopy. Built at Farmingdale, 6th production batch. (Republic Aviation photo)

The U.S.A.A.F. first ordered the P-47D in October 1941, and despite its "D" suffix it differed little from its immediate predecessor the P-47C-5-RE. But as production mounted the modifications multiplied so rapidly that the late model "D"s were a different breed of aeroplane.

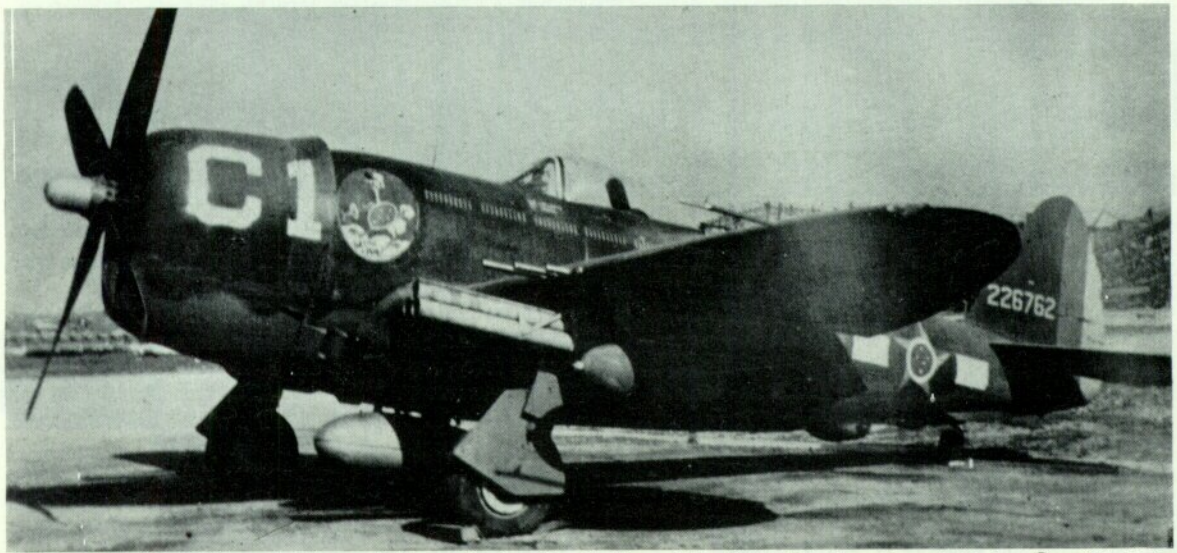
Initial sub-batches amounting to a total of 3,962 aircraft, ran from the P-47D-1-RE to the P-47D-22-RE and were produced at Republic's Farmingdale, New York, factory. Demand for the fighter was so great that a second production line was started at a new Republic facility at Evansville, Indiana, where a total of 1,461 P-47D-2-RA to P-47D-23-RAs were built. The Curtiss Aircraft Corporation was brought into the Thunderbolt programme and they constructed just 354 P-47G-1-CU to P-47G-15-CU machines, these being identical to the Republic aircraft.

These 5,777 aeroplanes were fitted with the original metal-framed sliding cockpit canopy as fitted to the early Thunderbolts, and all-round view was extremely restricted. The U.S.A.A.F. had been conducting experiments with the new clear-view hood, then standard on the Hawker Typhoon, and had actually fitted one of these to a P-47D, redesignating the aircraft XP-47K. Tests proved that the hood provided a 360-degree view for pilots and the modification, together with a cut-down rear fuselage, was introduced on the three production lines.

The first sub-batches to feature all modifications were the P-47D-25-REs produced at Farmingdale, and the P-47D-26-RAs built at Evansville. Existing P-47s serving with the U.S.A.A.F. in Great Britain were retro-fitted with the new hood at the U.S. Air Service Command bases with canopies supplied by the British Aircraft industry. All subsequent Thunderbolts



P-47D with R.A.F. Malcolm hood over Europe. Combination of this hood and airframe was extremely rare. (U.S.A.F. photograph)



P-47D-25-RE of the 1° Grupo de Aviacao de Caca of the Brazilian Air Force, Italy, 1942. Note three-tier rocket tubes. Aircraft built by Republic, Farmingdale, 15th production batch.

featured the clear-view hood.

The P-47D-6-RE to P-47D-11-RE and the P-47G-10-CU to P-47G-15-CU had ventral bomb shackles which were stressed to carry one 500 lb. bomb. Later series had a strengthened wing and shackle to accommodate three 500 lb. bombs, or a combination of bombs or fuel tanks. With a full ordnance load the number of rounds of ammunition for the six Browning machine guns was reduced from a maximum of 425 to 267 r.p.g.

Later production batches from the P-47D-20-RE onwards were fitted with the universal wing, an idea copied from the standard British practice of producing a wing that could carry a multitude of loads. A single Pratt & Whitney R-2800-59 or -63 air-cooled piston engine incorporating water-methanol injection was standard. The water injection added several hundred horse-power for emergency use and to absorb this increase a four, paddle-bladed airscrew of 13 feet diameter was installed. It added 400 feet per minute to the climb, but pilots learned to be wary of such a large airscrew for when the Thunderbolt was taking-off or landing with the tail wheel up, the blade tips were a scant six inches off the ground. Other improvements included a jettisonable cockpit canopy, operated by pulling a ring, the slipstream then pulling it clear, a flat, bullet proof windscreen and increased fuel capacity that raised the radius of action to 637 miles.

The last production batches of this range were fitted with strengthened fuselage shackles capable of supporting a 91 gallon fuel tank, and the bomb load was increased from two 500 lb. to two 1,000 lb. and one 500 lb. bomb. Three auxiliary fuel tanks could be carried on the same fittings, and various combinations of bombs and tanks could be carried to suit tactical requirements.

Like the P-51D fitted with the clear-view canopy the P-47D suffered from some loss of lateral control due to decreased keel area resulting from the cut-down rear fuselage, and all Thunderbolts from the P-47D-27-RE batch onwards were fitted with a dorsal fin strake. Improvements in design also produced the underwing, zero-length launching stubs for rocket projectiles, that had been previously stored in bazooka-type tubes in groups of three.

Farmingdale produced a total of 2,547 P-47Ds

Eighth Air Force P-47D-25-RE, 15th production batch, Republic, Farmingdale, England, 1943. (Photo: via Roger Freeman)

Thunderbolt II, P-47D-25, of No. 81 Squadron, R.A.F., at Batavia, 1945. No. 81 was reformed from No. 123 Squadron in June 1945.

fitted with the clear-view canopy, and Evansville built 4,632. The former facility sent an enormous total of 6,509 P47Ds into battle, while the latter was runner-up with 6,093. This enormous rate of production brought the cost of the basic Thunderbolt down drastically, the average price of each aircraft reached a low of 83,001 dollars by the time production ceased.

R.A.F. THUNDERBOLTS

The P-47D was the first version of the Thunderbolt to serve with the U.S.A.A.F. in the Pacific, where it was delivered to the 248th Fighter in quantity and operated from Brisbane, Australia, as a long range escort fighter.

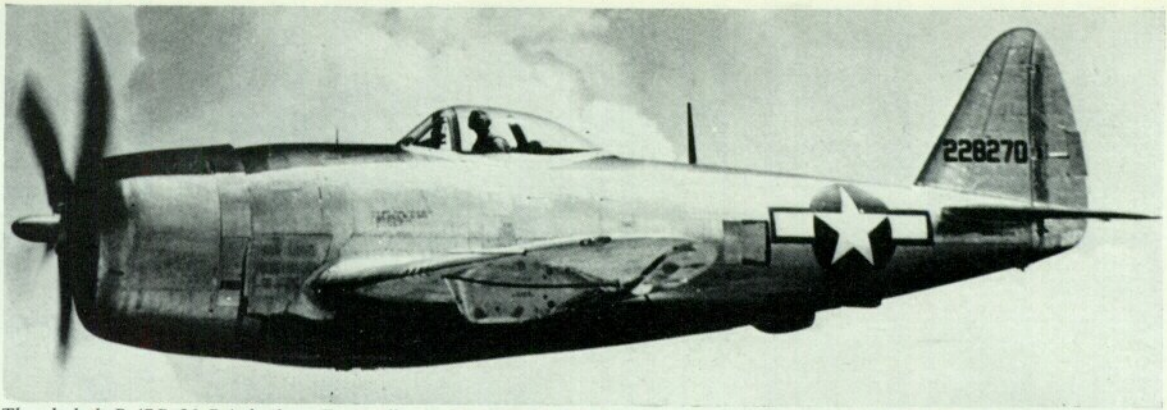
Next to the U.S.A.A.F. the largest operator of the P-47D was the Royal Air Force, to whom a total of 830 were delivered. In R.A.F. service the 47D was designated the Thunderbolt Mark I and Mark II. The former, of which 240 were delivered, had the old metal-framed cockpit canopy, while the latter (590 aircraft) featured the clear-view bubble canopy.

Two batches of Mark Is were delivered and serials ran from *FL731* to *FL850* (120 aircraft) and *HB962* to *HD181* (120 aircraft). The Mark Is were evaluated in Europe, but shipped immediately afterwards to South East Asia Command, where they were used against the Japanese.

The Thunderbolt Mark II was the equivalent of the P-47D-25 and four main batches were delivered. Serials ran as follows: *HD182* to *HD301* (120 aircraft), *KJ128* to *KJ367* (240 aircraft), *KL168* to *KL347* (180 aircraft), *KL838* to *KL887* (50 aircraft). A few aircraft of the last two batches had the dorsal fin strake.

One of the first R.A.F. squadrons to operate the Thunderbolt was No. 5, based in Burma and previously operating Mohawks and Hurricanes. They flew the cab-rank patrol under the direction of visual ground control posts, and with their three 5050 lb. bombs and eight machine guns caused tremendous damage amongst Japanese troops and supply lines. R.A.F. squadrons operating the P-47D were:— Mark I, Nos. 5, 34, 113, 123, 135, 146. Mark II, Nos. 5, 30,

Another 8th Air Force P-47D-22-RE, photographed during an attack on Berlin, 7th May 1944. Produced at Farmingdale, 14th batch



Thunderbolt P-47D-26-RA, built at Evansville, 13th production batch. (Photo: Republic Aviation Corp.)

34, 42, 60, 79, 81, 113, 123, 131, 134, 135, 258, 261 and 615. Soon after VJ-Day they disappeared from R.A.F. squadrons which were either disbanded or re-equipped with British aircraft.

Despite its exclusive use with the R.A.F. in the Far East, the Thunderbolt was a familiar sight in England. They had been regularly escorting the Boeing Fortress and Convair Liberators of the 8th Air Force on daylight raids over Europe. Their first operations began in May 1943, and from March 1944 they carried auxiliary fuel tanks which extended their range, and enabled them to accompany the bombers as far as Berlin.

At about the same period they started operations with the 9th Air Force, escorting Marauders and Havocs, and engaging independently in train busting and ground attack sorties.

CAMOUFLAGE MARKINGS

All fighters and ground attack aircraft in Burma and the Far East, including Thunderbolts, had a consistent scheme, part of which was an aid to identification. A grey and green scheme on upper surfaces with sky undersurfaces was usual, with S.E.A.C. roundels of only eighteen inches in diameter in all positions, with a 24 inch by 27 inch light and dark blue fin flash.

P-47D-30-RE of the 18th and final batch built by Republic at Farmingdale. Operated with 353rd Fighter Squadron, 354th Fighter Group, 9th Air Force. (Photo: Imperial War Museum)

P-47D-27-RE of the 315th Fighter Squadron, 324th Fighter Group, 12th Air Force, Italy. (Photo: G. J. Letzer, via R. Ward)

Eighteen-inch wide white bands were marked around the chord of mainplanes, just inboard of the ailerons, similar in style to those on Allied fighters, etc, taking

Early production P-47D of the 8th Air Force in United Kingdom. Lacks wing guns.

Curtiss-built two-seat TP-47G trainer. Began life as a P-47G-15-CU of the 5th and final batch built at Buffalo. Converted to trainer configuration during 1942. (Photo: Richard Ward)

part in the Normandy fighting.

The white band was repeated centrally around each tailplane. Finally, another eighteen-inch white band was applied around the rudder, just above the fin flash. Unit code letters, eighteen-inches high, with individual letters, were applied fore and aft of the roundel. Some squadrons, an example being No. 30, had their white bands completely encircling the wing, with no cut-out for control surfaces. No. 30 had a small, green, palm tree painted on the white band above the fin flash. This was the unit badge. Other squadrons had a white rim added to the engine cowling.

FOREIGN THUNDERBOLTS

A large number of other Air Forces operated the P-47D Thunderbolt and in alphabetical order they were:

Bolivia. As a signatory of the Rio Pact of Mutual Defence in 1947 Bolivia received a number of P-47Ds from the U.S.A., and as late as 1964 a few were still in service.

Brazil. It was in January 1944 that a band of pilots and ground staff reached America to undergo advanced and operational training before going on to Europe to serve with the U.S.A.A.F. After training they were equipped with P-47Ds and the squadron under the command of Lt.-Col. Nero Moura arrived in Italy on October 6th the same year. Attached to the U.S. 12th Air Force the squadron went into action for the first time on November 11th. Before the war ended the Brazilian Air Force received a total of 88 P-47Ds. An additional twenty-five were delivered during 1955 and they became standard equipment of two fighter-

P-47D-40-RA at Wright Field, ~~1945~~. Dayglo panel warns light aircraft to clear field during testing. 47 (Photo: Richard Ward)

Below: *P-47D-28-RA of 405th Fighter Squadron, 371st Fighter Group, 70th Fighter Wing, 9th Air Force.* (R. Ward)

P-47D-40-RA, Republic-built (Evansville, 18th and final batch). ~~Photographed during 1945.~~ 47 (Photo: Richard Ward)

bomber groups, each group consisting of three squadrons of twelve aircraft. A small number of P-47Ds were still in service in the late 1960s as fighter-bombers.

Chile. The first P-47Ds entered service with the Air Force during the late 1940s, and a further quantity was acquired in 1952. The Thunderbolts served with one combat group as front line aircraft as late as 1958.

China. The 11th Fighter Group of three squadrons was equipped with the P-47D in 1947, but after General Chiang Kai-shek's government was overthrown in 1949 only a small number was evacuated to the island of Formosa. *Nationalist China* took delivery of a number of P-47Ds during 1949 and they formed the equipment of two fighter-bomber wings. One of the wings exchanged their Thunderbolts for Sabres in 1954, and by 1958/59 only a small number remained in service.

Colombia. The Colombian Air Force acquired P-47Ds (or F-47Ds) in 1947, enough to equip one squadron. Eight were still flying as late as 1958.

Dominica. A number of F-47D Thunderbolts were acquired during 1948 and formed part of a mixed squadron of Vampires. They were being phased out of service in the late 1960s.

Ecuador. A number of surplus F-47Ds were delivered in 1947 and one squadron of this type was still in service in 1964.

France. A total of 446 P-47Ds was supplied to the Free French Forces during the war and by VE-Day they formed the equipment of two *Escadres de Chasse.* De Havilland Vampires began replacing the 47Ds during 1951 and the piston-engined fighters were transferred to Algeria, where they were used against the nationalist forces there. They were phased out of service in 1960.

Honduras. The first P-47Ds were delivered to the Honduran Military Air Arm in the early 1950s and a small number were still being flown as late as 1964.

Early P-47D-20RA showing three-tier 'bazooka-type' rocket tubes and folding fin rockets. (Republic Aviation photo)

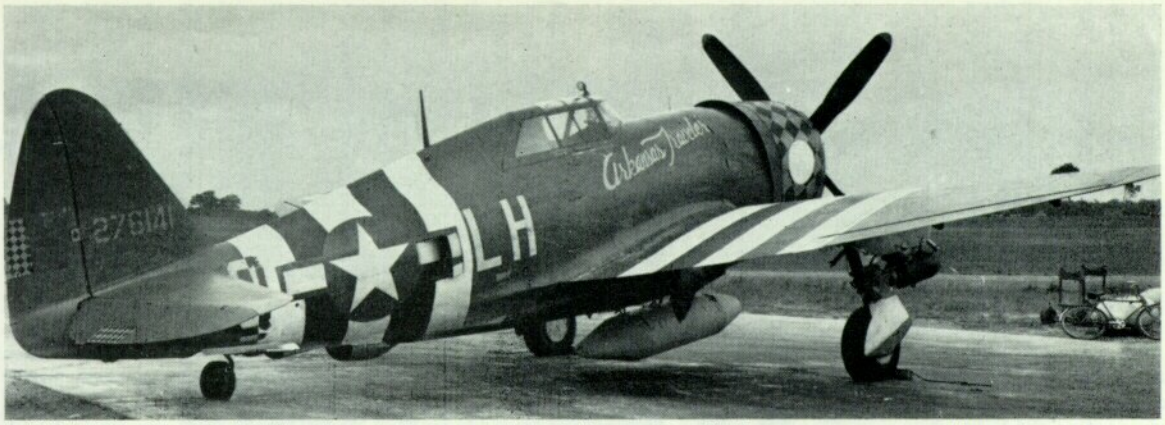
Iran. In May, 1948, a group of Air Force officers went to the United States to undergo training, and on their return to their own country formed the basis of seven fighter/fighter bomber squadrons equipped with the F-47D Thunderbolt. These were being phased out in the late 1950s by modern jet fighters.

Mexico. Early in 1945 the 201st Fighter Squadron of the Mexican Air Force had completed its training, and was due to go overseas to serve with the American Forces in the South West Pacific. The squadron and their P-47Ds never went into action for Japan capitulated. Of the original twenty-five P-47Ds only a handful remain, and they are no longer operational.

Nicaragua. Enough P-47s were delivered to equip one fighter-bomber squadron in 1947, and they were still in service in 1960.

Peru. Twenty P-47Ds were supplied to Peru in 1947, but by 1955 they were relegated to second-line duties with the arrival of Sabre jet fighters. Two squadrons of F-47Ds were still operational in 1957, but these were being disbanded in 1964.

Thunderbolts, P-47D-22 and 27-REs at Boxted, Colchester, U.K. 'Miss Behave' (2nd from oreground) of 82nd Fighter Squadron, 78th Fighter Group, 8th Air Force.

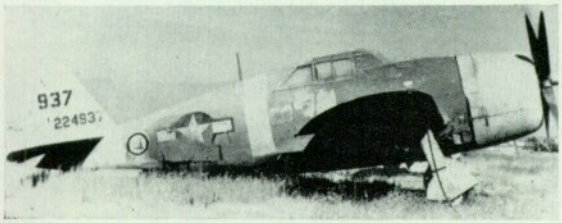


P-47D-15-RE of the 353rd Fighter Group in D-Day markings, 'Arkansas Traveller.' (Photo: Roger Freeman)

Turkey. In 1948 the U.S.A.F. began reconstruction of the Turkish Air Force under the military aid programme and among the first aircraft to equip the new squadrons were a number of F-47D Thunderbolts. By 1952 they were being phased out in favour of the first jet fighters.

P-47D-20-RE of the 361st Fighter Squadron, 356th Fighter Group, 8th Air Force. (Photo: Richard Ward)

Below: *P-47G-1-CU, built by Curtiss.* (Photo: Richard Ward)



P-47D-40-RA of the Maryland Air National Guard. Pilot, Major 'Bob' Tyler, flew the aircraft with one prop blade white to get the stroboscope effect. To spectators it appeared that the blade remained static. (Photo: Major Robert Tyler, U.S.A.F.)

Venezuela. Republic F-47Ds arrived to equip the squadrons of the V.A.F. on the signing of the Rio Pact. They were replaced by the modern jet in 1957.

Yugoslavia. In 1951 Yugoslavia signed the Mutual Assistance Pact with the Western Powers, and among the first aircraft supplied were 150 F-47D Thunderbolts. By 1957 they had been relegated to the training rôle as the first jet fighters began to enter service.

Russia was allocated 203 P-47D-22-REs and 27-REs during the war under Lend-Lease agreements, but only 196 reached their destination.

THE P-47D DESCRIBED

Single-seat, long-range fighter/fighter-bomber. Low-wing cantilever monoplane with Republic S-3 section. Aspect ratio 5.61, incidence plus one degree. Dihedral (upper surface) 4 degrees. Wing was an all-metal structure built up around two main and one auxiliary spars and built in two main sections. Main spars of milled steel cap strips of "T" section with deep stiffening flanges and three webs. Lateral stringers were of "L" section to which was flush-riveted the light alloy stressed skin.

Fuselage was an all-metal, semi-monocoque stressed-skin structure composed of eleven bulkheads

PRODUCTION BATCHES

P-47D-RE, Republic, Farmingdale, New York.
47D-1-RE *42-7853 to 7957*, 47D-2-RE *42-7258 to 8402*, 47D-5-RE *42-8403 to 8701*, 47D-6-RE *42-74615 to 74964*, 47D-10-RE *42-74965 to 75214*, 47D-11-RE *42-75215 to 75614*, 47D-15-RE *42-75615 to 75864*, *42-76119 to 76364*, 47D-16-RE *42-75865 to 76118*, 47D-20-RE *42-25274 to 25322*, *42-76365 to 76613*, 47D-21-RE *42-25323 to 25466*, *42-25467 to 25538*, 47D-22-RE *42-25539 to 26388*, 47D-25-RE *42-26389 to 26773*, 47D-27-RE *42-26774 to 27384*, 47D-28-RE *44-19558 to 20307*, 47D-30-RE *44-20308 to 21107*.

P-47D-RA, Evansville, Indiana.
47D-RA *42-22250 to 22253*, *42-22254 to 22363*, 47D-2-RA *42-22364 to 22563*, 47D-3-RA *42-22564 to 22663*, 47D-4-RA *42-22664 to 22863*, 47D-11-RA *42-22864 to 23113*, 47D-15-RA *42-23143 to 23299*, 47D-16-RA *42-23114 to 23142*, 47D-20-RA *43-25254 to 25440*, 47D-21-RA *43-25441 to 25664*, 47D-23-RA *43-25665 to 25753*, *43-27389 to 28188*, 47D-26-RA *42-28189 to 28438*, *42-28439 to 29466*, 47D-30-RA *44-32668 to 33867*, *44-89684 to 90483*, 47D-40-RA *44-90284 to 90483*, *44-49090 to 49554*.

P-47G-CU Curtiss, Buffalo, New York.
47G-1-CU *42-24920 to 24939*, *42-24940 to 24979*, *42-24980 to 25039*, 47G-10-CU *42-25040 to 42-25119*, 47G-15-CU *42-25120 to 42-25273*.

P-47D-30-RA, Republic, Evansville, 16th production batch. (Photo: Richard Ward)

P-47D-28-RE of the 78th Fighter Group, Duxford, August, 1944. (Photo: U.S.A.F.)

and nine transverse frames of pressed channel section aluminium alloy with stringer cutouts, the latter supporting the light alloy skin. The two wing supporting bulkheads in the lower half of the forward fuselage were built into the main longerons.

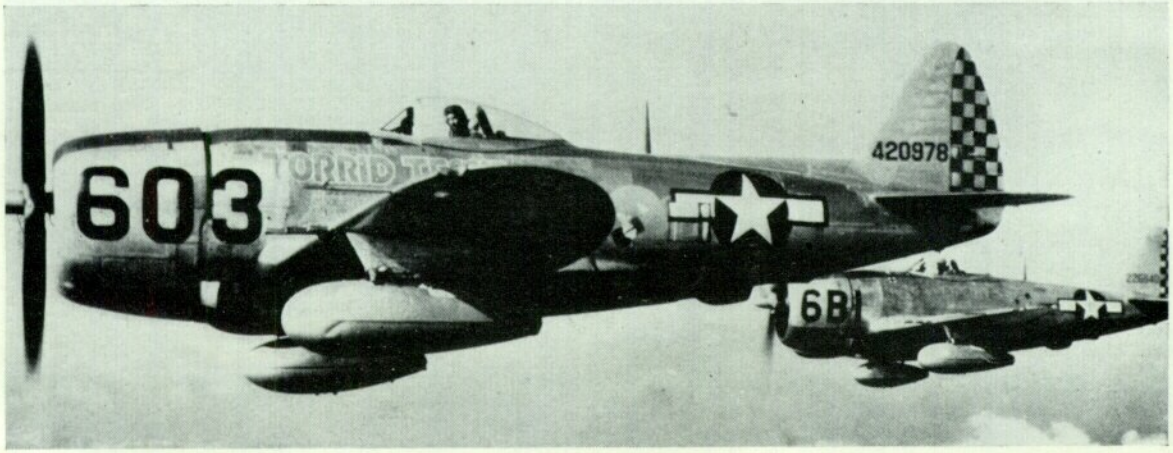
Tail assembly was a full cantilever structure with all surfaces, including control, metal-covered. The complete assembly was bolted to the aft fuselage.

POWERPLANT

One Pratt & Whitney R-2800-21 or 59 Double Wasp, 18-cylinder, air-cooled, supercharged engine rated at 1,625 h.p. at 30,000 feet, with 2,300 h.p. available at take-off. Water injection boosted power to 2,535 h.p. in an emergency and air speed was increased to 437 at 30,000 feet. The water-alcohol tank held 15 gallons and was standardised from the D-5 onwards. From the D-5 to D-10 the pilot controlled water flow, but the procedure was automatic on the D-12 and subsequent models. Water injection increased the maximum power rating by approximately 15 per cent and lasted for 15 minutes. A General Electric supercharger was located in the rear fuselage. The Double Wasp was fed from two self-sealing and armoured fuel tanks in the fuselage. Main tank (270 U.S. gallons) was located aft of fireproof bulkhead and

P-47D-27-RE of the 15th Air Force, Italy. (Photo: G. J. Letzer, via Richard Ward)

P-47D-30-RE, 'Torrid Tessie' of the 15th Air Force, Italy. Black on natura meta . (Photo: Imperial War Museum)



P-47D Thunderbolt of the 69th Fighter Squadron, 58th Fighter Group, 5th Air Force. Based on Saidor, New Guinea, 1944.

P-47D Thunderbolt, 82nd Fighter Squadron, 78th Fighter Group, 8th Air Force. Stationed at Duxford, U.K.

P-47D Thunderbolt of the 350 Fighter Squadron, 353rd Fighter Group, 8th Air Force. Stationed at Raydon, U.K.

P-47D Thunderbolt, 61st Fighter Squadron, 56th Fighter Group, 8th Air Force. Boxted, U.K.

P-47D Thunderbolt 315th Fighter Squadron, 324th Fighter Group, 12th Air Force, Italy.

Amy Lou

135 Fighter Squadron

Thunderbolt II, No. 135 Fighter Squadron, No. 222 Group, Arakan, S.E.A.C., 1944-5.

P-47D Thunderbolt, French First Air Force supporting the French First Army, North-east France, 1944.

© WARD

Probably the last Thunderbolt extant in the United States today is this P-47G-15-CU, built by Curtiss, at their Buffalo plant. Aircraft of the fifth and final batch. Sold to Republic during 1961 it carried the civil marks N5087V. (Air Force Museum photo)

the auxiliary tank (100 U.S. gallons) beneath the pilot's seat. The P-47 burned between 90 and 130 gallons per hour at normal cruising speeds and consumed about 25 gallons during warm-up and take-off. When full power was applied during combat consumption reached 275 gallons, while application of war emergency power raised this to 315 gallons. A fuel warning light went on in the cockpit when approximately 40 gallons remained.

ARMAMENT

Six or eight 0.5-in. calibre Browning machine guns, three or four in each wing leading edge outboard of landing gear. Ammunition supply was 300 r.p.g., but this could be increased to 425 r.p.g. A combat cine camera was carried in port wing root. Maximum bomb load was two 1,000 lb. bombs under wings and one 500 lb. bomb under fuselage. Jettisonable rocket tubes in clusters of three under each wing, or ten 5-in. high-velocity rockets on stub fittings.

OTHER VARIANTS

Three "D" airframes were extensively modified by the installation of a 2,100 h.p. Pratt & Whitney R-2800-57 engine and dive brakes under the wing. As such they carried the designation YP-47M and were among the fastest Thunderbolts ever built. During the latter half of 1944 they were shipped to Europe for use against the German V-1 flying bomb missile. 130 YP-47Ms were built.

Two of the Curtiss-built P-47Ds were converted into two-seat tandem trainers. One fuselage fuel tank was removed and an extra cockpit installed. Known as the TP-47G the type retained the eight-gun armament of the standard single seater.

© *Edward Shacklady, 1965.*

SPECIFICATION

RE-Republic Farmingdale / RA-Republic Evansville	DIMENSIONS				PERFORMANCE					
	Span	Length	Height	Wing Area	M.P.H. at 5,000 ft.	M.P.H. at 20,000 ft.	M.P.H. at 30,000 ft.	Climb Rate ft. min. 5,000 ft.	Climb Rate ft. min. 20,000 ft.	Service Ceiling
P-47D-22-RE	40 ft. 9⅜ in.	36 ft. 1¾ in.	14 ft. 7 in.	300 sq. ft.	353	406	433	2,751	2,140	40,000 ft.
P-47D-25-RE	40 ft. 9 in.	36 ft. 1 in.	14 ft. 2 in.	—	350	—	429	2,780	2,300	—
P-47D-35-RA	40 ft. 9⅜ in.	36 ft. 1¾ in.	14 ft. 7 in.	—	363	415	426	3,120	2,650	42,000 ft.

RE-Republic Farmingdale / RA-Republic Evansville	WEIGHTS, lbs.			ENGINE		ARMAMENT
	Empty	Normal Loaded	Maximum Loaded	One Pratt & Whitney	Horse-power	
P-47D-22-RE	9,900	13,500	15,000	2800–21	2,300	P-47-22. Six or eight 0·5 in. Browning M/Gs with 267 or 425 r.p.g. plus one 500 lb. bomb.
P-47D-25-RE	10,700	14,600	17,500	2800–59	2,535	P-47-25. Six or eight 0·5 in. Browning M/Gs with 267 or 425 r.p.g. plus two 1,000 lb. bombs or ten 5 in. rockets.
P-47D-35-RA	10,000	14,000	—	—	—	P-47-35. As for 47-25.

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